

# Climate & Waste Connection

WWC Conference

Weds, Nov 14th –  
Wash, D.C.



**Recycling  
Matters...!**

# Impacts of Climate Change



- Intense, frequent storms

- Flooding of coastal areas... beaches and bay marshes



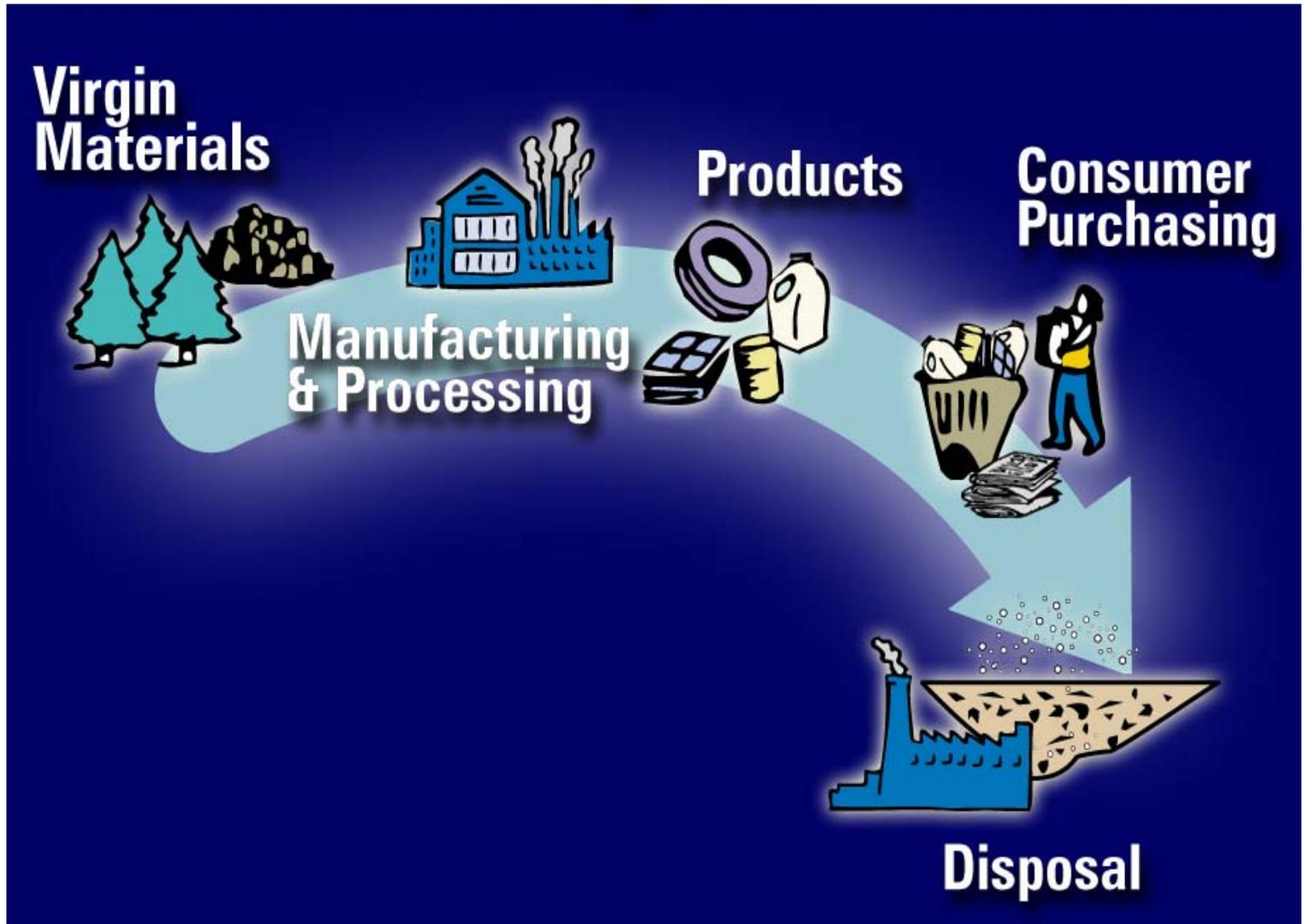
- Increased intensity of droughts and forest fires



- Increased distribution of infectious diseases

# Product Life Cycle—Linear

CO<sub>2</sub>



CH<sub>4</sub>

# Product Life Cycle—Cyclical



# Benefits from Cyclical Cycle

- Conserving Natural Resources
- Decreasing Lifecycle costs for extraction, manufacturing, combustion, landfilling
- Reducing GHG emissions
- Mitigating climate change impacts



# Climate & Waste Reduction

Voluntary programs can help reduce both Wastes and Greenhouse Gases.

- **WasteWise**
- **Pay-As-You-Throw (PAYT)**



NOV 14<sup>th</sup> – Wash, DC

# WasteWise – NOV 14<sup>th</sup> conference

- Partner w/companies... to promote WR... and, to save money... throughout the manufacturing processes.
- Provides Partners with data on their GHG emissions reductions (based on waste reduction)

Equivalent to 5.8 million cars off road/year!



# Waste Reduction Model (WARM)

Microsoft  
Excel  
software

Online  
Summary  
Report

Measures GHG  
reductions

**Global Warming - Waste**

Recent Additions | Contact Us | Print Version | Search Area:  **GO**

EPA Home > Global Warming > Actions > Waste > Tools > WARM Online

### WARM Online

EPA created WARM to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions and energy savings from several different waste management practices.

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. Please follow the steps below to enter your material tonnage information in the input boxes in the tables, and select appropriate landfill and waste transport characteristics.

**Tips:**

- If the listed material is not generated in your community/organization or you do not want to analyze it, leave it blank or enter 0.
- Make sure that the total quantity generated equals the total quantity managed.
- If you have any questions, consult the [WARM User's Guide](#).

**Step 1. Baseline Scenario**

Please describe your current (or baseline) waste management scenario by entering the tons of each material type that is generated and disposed.

Material	Tons Generated	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	200	100	50	50	N/A
Steel Cans	100	0	100	0	N/A
Glass					N/A
HDPE					N/A
LDPE					N/A



# Measurement Tools

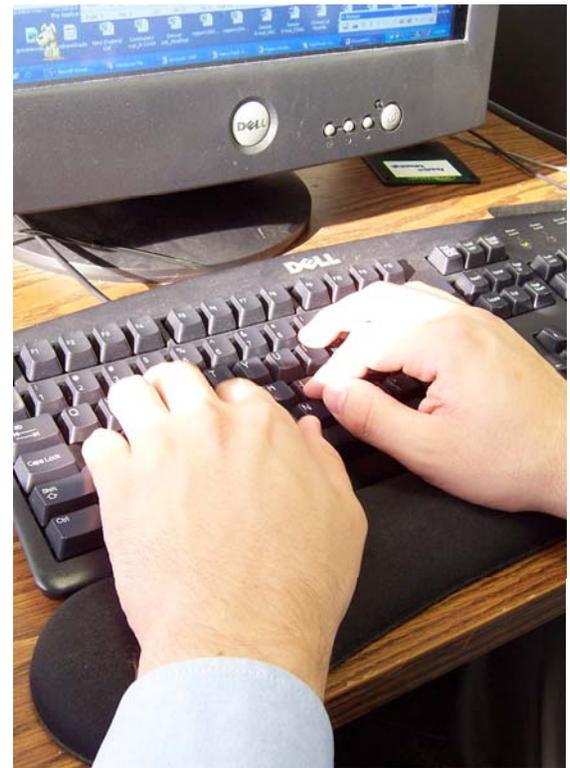
## o Tools

- Updated version of WARM
- ReCon —  
Recycled Content Tool

## o 30+ Emission factors

- Fly ash
- Concrete
- Brick
- PCs
- Carpets

*[www.epa.gov/climatechange](http://www.epa.gov/climatechange)*



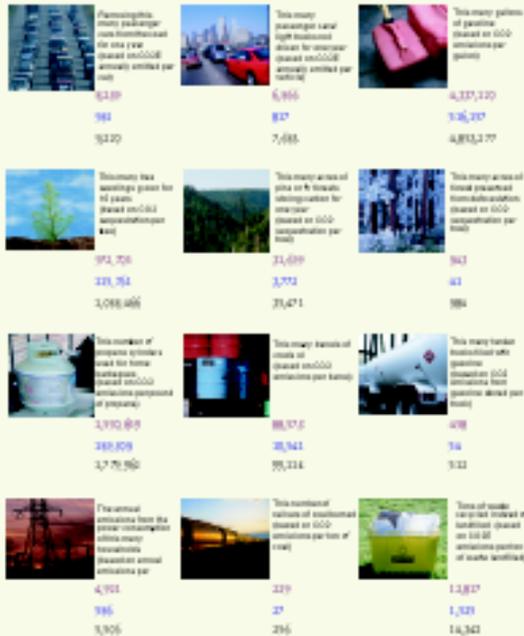
# Climate Profile

## Company X Making a Difference

### 2003 Waste Reduction Achievements

Waste Management Activity	GHG Emission Reductions (MTCO2E)	GHG Emission Reductions (MTCO2E)
Waste Prevention	11,884	5,437
Recycling	1,613	489
TOTAL	13,497	5,926

These achievements are equivalent to:

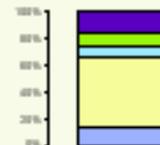


This profile describes the GHG emission reductions achieved as a result of recycling and waste prevention activities reported in WasteWise in 2003. These calculations use the emissions generated by landfilling waste as a baseline. Emission reductions represent the difference between this baseline and the GHG emissions resulting from alternative waste management practices, such as waste prevention and recycling.

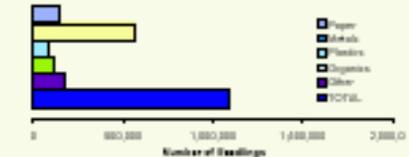
### 2003 GHG Reductions by Commodity

Commodity	Volume of Waste Prevented and Recycled (pounds)	GHG Reductions (MTCO2E)	GHG Reductions (MTCO2E)
Paper	5,742,880	1,715	3,785
Metals	5,430,880	6,735	10,420
Plastics	5,742,880	1,830	3,967
Organics	44,644,644	1,967	4,935
Other	256,644	1,387	6,620
TOTAL	57,612,880	13,629	43,642

GHG reduction by commodity



These achievements are equivalent to:



### 2000-2003 GHG Reductions Progress

Waste Management Activity	2000	2001	2002	2003
	GHG Emissions (MTCO2E)			
Waste Prevention	798	3,029	3,912	1,800
Recycling	308	2,088	896	5,826
TOTAL	1,106	5,117	4,808	7,626

GHG reduction progress 2000-2003

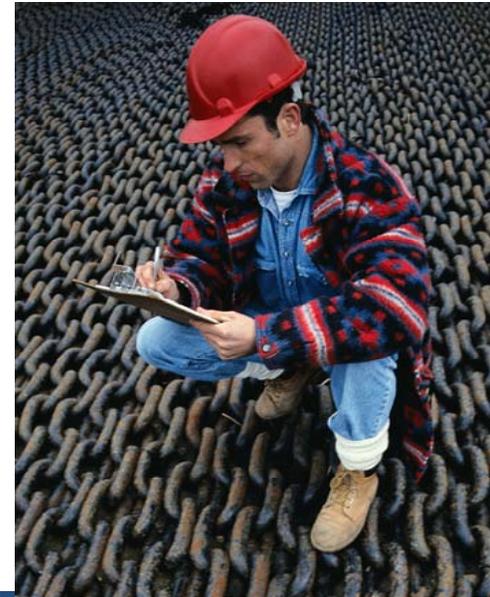


# Companies & Cities....

...reducing Waste and their Climate Footprint.



Cool!





# WASTE WISE COMMUNITIES

*A new WasteWise campaign focusing on reducing residential municipal solid waste (MSW).*

Fall Conference – Nov, 14<sup>th</sup> – Wash., DC



# Cities Contribute to the Problem and Can Create the Solutions

Local governments influence all major sources of global warming pollution



Energy



Transportation

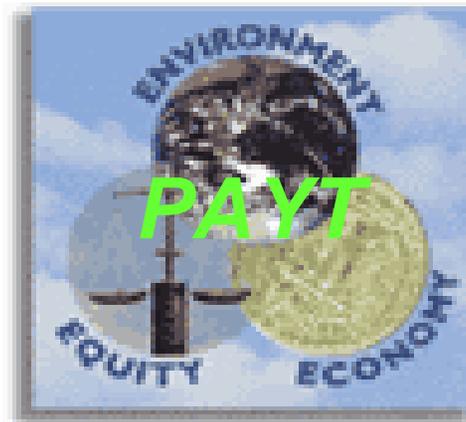


Solid Waste



# Cities reduce GHGs...

- **EPA Goal:** Increase national recycling rate of MSW to **35%** & reduce **GHGs**.
- EPA is working with Partners & Stakeholders through existing and new projects.



# Pay-As-You-Throw (PAYT)



In PAYT cities... residents are charged for the collection of municipal solid waste—ordinary household trash—based on the amount they throw away.

This creates a direct economic incentive to recycle more and to generate less waste.



# PAYT Functions Like a Utility

- Pay for waste like a utility
- Only pay for what they use



# Duke University National Study



- **32 to 59% increase in Recycling**
- 19% found slight increase in illegal dumping

This report is available online at  
[www.epa.gov/epaoswer/non-hw/payt/pdf/swlitrep.pdf](http://www.epa.gov/epaoswer/non-hw/payt/pdf/swlitrep.pdf)

# 2007 PAYT Research Highlights

- PAYT has diverted ~ **6 million tons MSW/yr**
- GHG Effects - leads to reductions of **10 MMTCE**
- Reduces Energy use by ~ **85 million BTU's** annually.



# Examples of U.S. City Savings

- **Wilmington, NC**— \$400,000  
(Population: 75,000) per year
- **Littleton, NH**— \$40,000 in extra funds  
(Population: 5,800) with PAYT
- **Gainesville, FL**— \$186,200 savings  
(Population: 96,000)
- **San Jose, CA**— reduced cost by (Population:  
850,000) **\$ 4 million annually**
- **Ft. Worth, TX** – disp. costs dropped **>\$7 million**



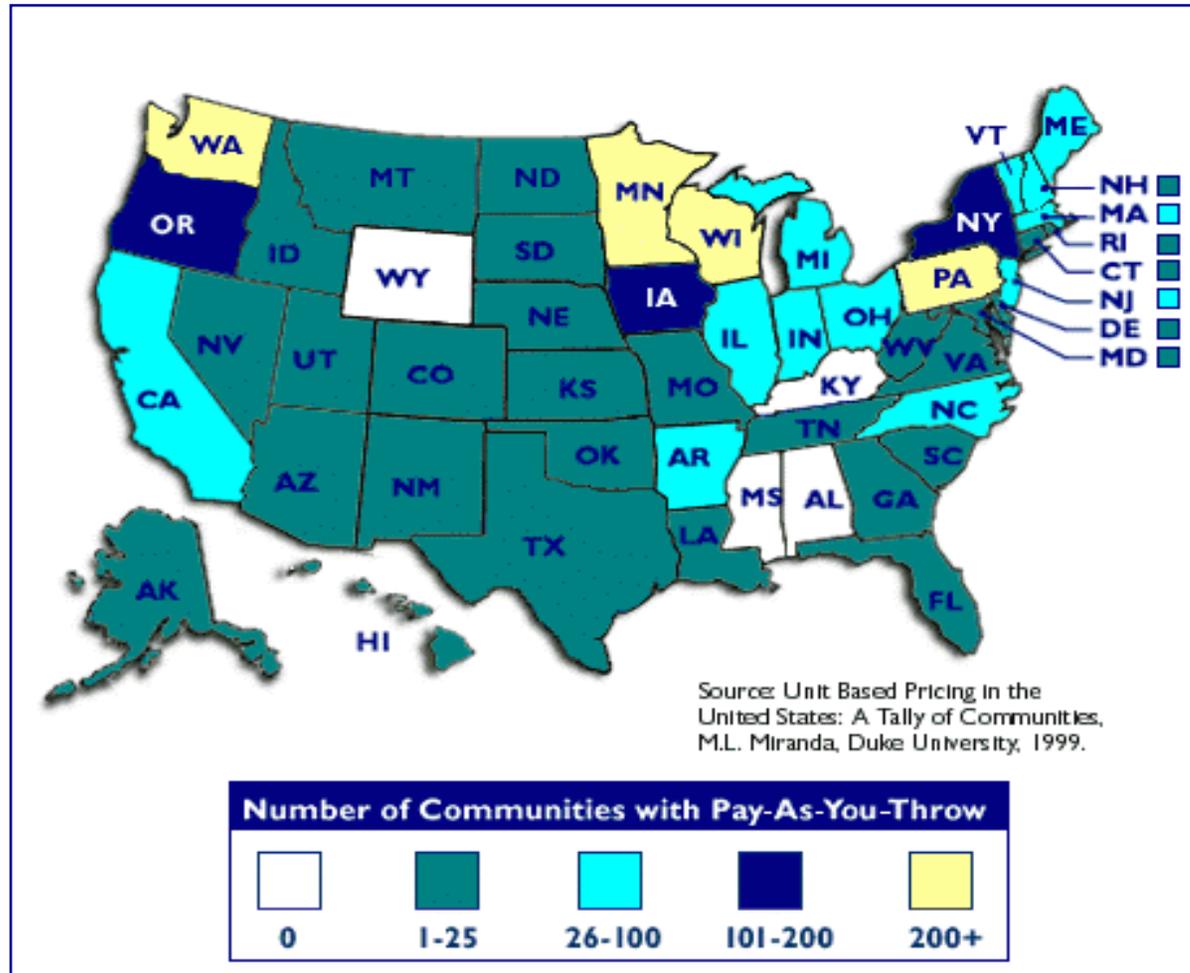
# PAYT Partnerships

- USCM
- ICMA
- ICLEI
- SWANA
- NRC
- MA DEQ, NH Recyclers, CIWMB, Urban Recyclers
- ILSR
- Reason Foundation
- American Council for Capital Formation



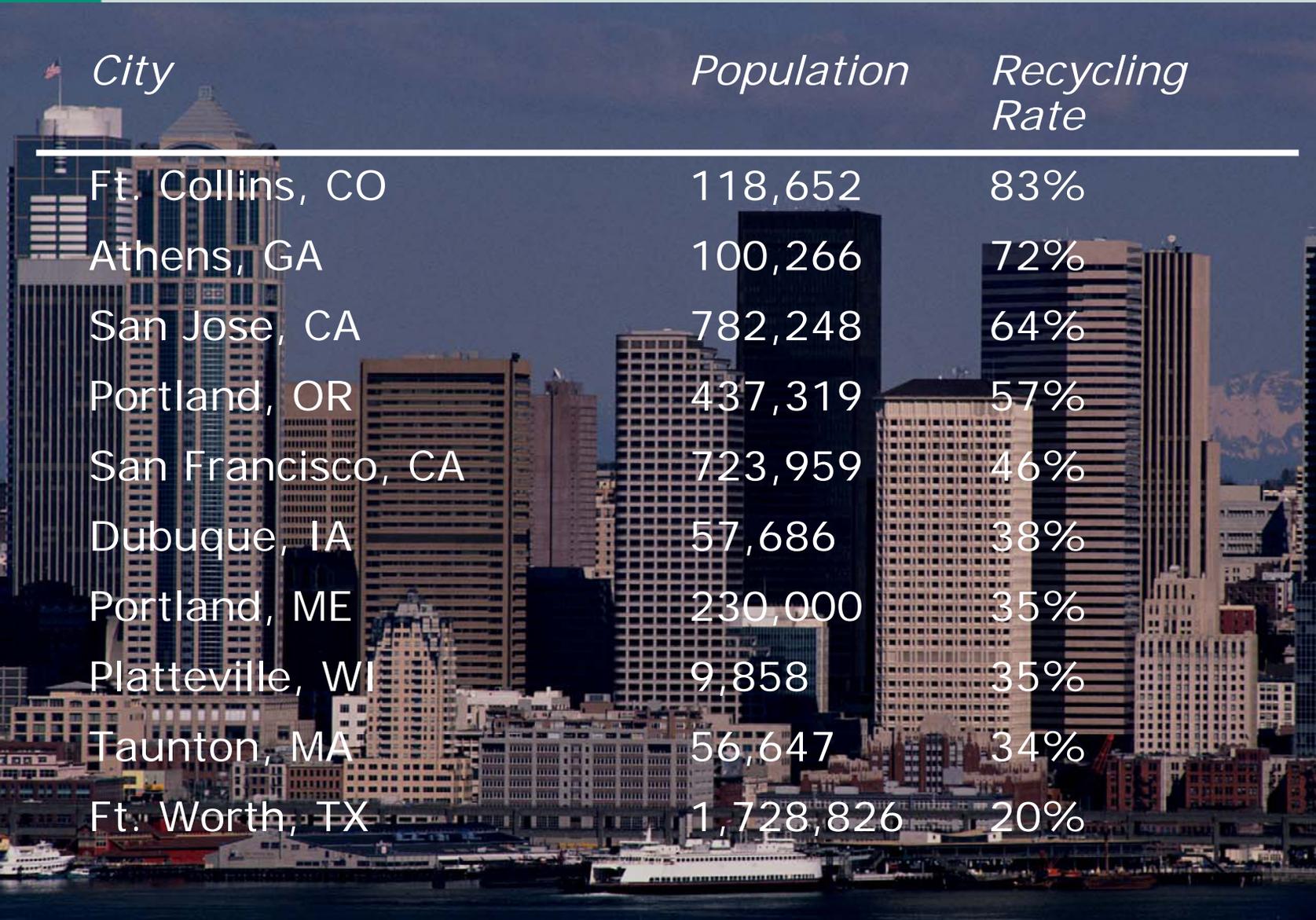
# Successes—PAYT

More than 7,000 PAYT cities in the U.S.





# Large Cities and PAYT



<i>City</i>	<i>Population</i>	<i>Recycling Rate</i>
Ft. Collins, CO	118,652	83%
Athens, GA	100,266	72%
San Jose, CA	782,248	64%
Portland, OR	437,319	57%
San Francisco, CA	723,959	46%
Dubuque, IA	57,686	38%
Portland, ME	230,000	35%
Platteville, WI	9,858	35%
Taunton, MA	56,647	34%
Ft. Worth, TX	1,728,826	20%

# 2007 PAYT Research Highlights

- 30 of the largest 100 cities use PAYT.
- Now in **25% of U.S.**, (~ 75 million people)
- **Penetration in U.S.** - Largest share of PAYT cities in CA, IA, MA, MI, MN, NH, NY, OR, WA, and WI
- MN, NH, OR, WA, & WI have >75%.



# PAYT reduces Climate Change

## Links Garbage & Global Warming

If 200 more cities adopt PAYT & reduced their waste by 20%

**WARM →**

3.8 million MTCE reduction...

(equivalent to removing nearly  
**2.8 million cars/yr** from the road)

**98 million cars off road... total**



# WWC – NOV 14<sup>th</sup> – Join Us...!

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## WASTE WISE COMMUNITIES

### Join the Conversation: Reducing Wastes...and, Your City's Climate Footprint!

Are you interested in being part of the new WASTE WISE COMMUNITIES campaign, focusing on reducing residential municipal solid waste? If so, please join us at the 2007 WasteWise and NPEP Annual Conference being held November 14, 2007, in Washington, DC.

The WASTE WISE COMMUNITIES campaign helps partners with various aspects of waste reduction, including waste prevention, recycling, buying products manufactured with recycled-content, and even how decreasing waste can decrease climate change impacts!

By attending this event, city officials and planners, recycling coordinators, NGO's, and trade associations will have the opportunity to:

- Participate in sessions discussing the new WASTE WISE COMMUNITIES campaign.
- Network with communities, businesses, and organizations interested in reducing waste.
- Learn how to create an economic incentive to improve solid waste management with Pay-As-You-Throw (PAYT).
- Find out how to gain public recognition for ongoing environmental successes.
- Discover how WARM- the free Waste Reduction Model- can help you calculate your greenhouse gas emissions related to baseline and alternative waste management practices.
- Understand the City Climate Profile, a tool that will be provided to reporting WasteWise COMMUNITIES partners, which offers information on the community's individual greenhouse gas emission reduction efforts.

#### CONFERENCE DETAILS

**Location:**  
Marriott at Metro Center  
775 12th Street, NW  
Washington, DC 20005  
(202) 737-2200

**Date/Time:**  
November 14, 2007  
8:00 am - 7:00 pm

**Agenda and Registration:**  
Please check the conference Web site [www.epa.gov/wastewise/conf.htm](http://www.epa.gov/wastewise/conf.htm) for the agenda and online registration, which will be available by August 2007. The optional meals fee has not yet been determined.

**Hotel Reservations:**  
Rooms are reserved at the Marriott at Metro Center until October 23, 2007.

Book your reservation by contacting Marriott Reservations at 800-228-9290 or direct at 202-737-2200 and asking for the "EPA WASTE WISE Annual Conference" Room Block. You can also visit the WASTE WISE Web site [www.epa.gov/wastewise/conf.htm](http://www.epa.gov/wastewise/conf.htm) for additional hotel information.

#### QUESTIONS:

If you have any questions about WASTE WISE COMMUNITIES, please contact the WASTE WISE Helpline at (800) EPA-WISE (372-9473) or [WASTEWISE@icfi.com](mailto:WASTEWISE@icfi.com)

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# We Want to Recognize You

...through Case Studies,  
Articles, and WasteWise  
Climate Awards.

## New Award Categories?

- Climate Education  
(Internal / External)
- Climate Endorser
- Climate Philanthropy



# C&W Tools and Resources



2005 CLIMATE PROFILE

Every year, WasteWise partners work to reduce their waste generation through waste prevention and recycling initiatives—activities that are good for the environment and for their companies' bottom line. In conjunction with these efforts, companies are learning about the global benefits that these activities provide, including greenhouse gas (GHG) emission reductions. The U.S. Environmental Protection Agency's WasteWise Program's Climate Campaign educates companies about the important link between climate change and waste. One of the Climate Campaign's many useful tools is this Climate Profile.

GHGs are emitted at nearly every stage of a product's life cycle, including during waste management. How companies choose to manage this waste has significant implications for GHG emissions. Alternative waste management practices, such as waste prevention and recycling, can result in significant reductions in GHG emissions, as noted in this Climate Profile.

#### HOW TO USE THIS CLIMATE PROFILE

Individualized Climate Profiles are distributed annually to reporting WasteWise partners to provide them with the means to easily learn, and educate others, about their company's individual GHG emission reduction efforts. The real-life equivalency data provided in the Climate Profile can be used by the company in various ways, including:

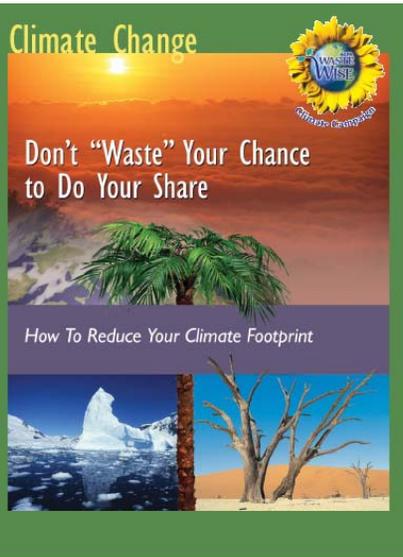
- Getting Support**
  - Presentation
  - Project Status Reports
  - Annual Reports
  - Subcontractor/Supplier Reports
- Educating Support Staff**
  - Employee Newsletters
  - Educational Posters
  - Flyback Inlays
- Educating the General Public**
  - Community Event Display
  - Bill Inserts
  - Web Site Accommodations
  - Press Release
  - Newspaper/Journal Article
  - Advertisement

[www.epa.gov/wastewise/climate](http://www.epa.gov/wastewise/climate)

## Climate Change

Don't "Waste" Your Chance to Do Your Share

How To Reduce Your Climate Footprint



## Full Cost Accounting for Municipal Solid Waste Management: A Handbook



Global Warming - Waste U.S. Environmental Protection Agency

WARM Online

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Glass					N/A
HDPE					N/A
LDPE					N/A



# The Greenhouse Effect



Some solar radiation is reflected by the earth and the atmosphere.

Some of the infrared radiation passes through the atmosphere, and some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the earth's surface and the lower atmosphere.

Solar radiation passes through the clear atmosphere.

Most radiation is absorbed by the earth's surface and warms it.

Infrared radiation is emitted from the earth's surface.



## Virgin Inputs



Materials Extracted:  
Trees, Ore, Oil, etc.



Energy



Energy

## Life Cycle Stage



Raw Materials  
Acquisition



Manufacturing



Use



Recycling



Waste  
Management



Composting



Combustion



Landfilling

## GHG Emissions

**CO<sub>2</sub>** +   
Energy and  
Non-Energy-  
Related Emissions +  
Reduced Carbon  
Sequestration  
in Forests

**CO<sub>2</sub>**  
Energy and Non-  
Energy-Related Emissions

## Sinks & Emission Offsets

+   
Avoided Fossil  
Fuel Use +  
Increased  
Forest Carbon  
Sequestration

Carbon  
Storage in  
the Soil

+   
Avoided Fossil  
Fuel Use +  
Carbon Storage in  
the Soil

**N<sub>2</sub>O + CO<sub>2</sub>**  
Emissions + Emissions

Carbon in Long-Term  
Storage in Landfill

**CH<sub>4</sub>** Uncontrolled CH<sub>4</sub>  
Emissions or CH<sub>4</sub> Flared  
and Recovered Energy

Avoided  
Fossil  
Fuel Use